December 11, 2009

David M. Smith
Manager Environmental Remediation
BNSF
825 Great Northern Blvd
Suite 105
Great Falls, MT 59601

Gerald McCaskill
Manager Industrial Hygiene
BNSF
2500 Lou Menk Drive
AOB GL
Fort Worth, TX 76131

RE: 2009 Undercutter Spoils Sampling Summary
BNSF Kootenai River Subdivision
Libby, Montana Area

Messer's Smith and McCaskill;

EMR has the following document to summarize the field conditions, sampling methods and results of sampling of undercutter spoils that took place on August 19, 2009.

Project Background

The BNSF Railway Company (BNSF) maintenance forces, as part of normal track maintenance, utilized an undercutter along select portions of the BNSF mainline. The purpose of undercutting is to remove fine sediments and debris from the ballast to promote Undercutting was completed during June, 2009, at several locations near Kootenai Falls (Figure 1). Undercutting involves removal of ballast and debris from the ballast structure, sorting ballast from debris (spoils), placement of ballast back beneath the track structure and discharge of the removed spoils. Typically the spoils (small ballast, fine sediments) are discharged via conveyor to the side of the right-of-way (ROW) (Photos 2 through 6).

Field Observations

EMR personnel were on-site on August 19, 2009 to locate, assess and sample the undercutter spoils piles. BNSF personnel provided access and transportation to the spoils pile locations. A total of 4 spoils piles were observed between BNSF Kootenai River Subdivision Mileposts (MP) 1329.8 and MP 1333.02. The piles were located at the following approximate MP locations and approximate dimensions (Figures 2 and 3):

1. MP 1329.8 (30 feet x 20 feet x 5 feet high) (Photo 1)
2. MP 1331- MP 1331.01 (300 feet x 5 feet x 5 feet high) (Photo 2)
3. MP 1331.52- MP 1331.8 (1,500 feet x 4 feet x 4 feet high) (Photo 3 and 4)
4. MP 1332.89- MP 1333.02 (700 feet x 3 feet x 3 feet high) (Photo 5 and 6)

In general, the spoils piles were composed of variable size ballast cobbles and soil (Photos 1 through 6). However, very fine mica flakes were observed at two sample locations (MP 1331.8 and 1332.89) (Figure 3).

Sampling Methods and Analysis

A total of six spoils samples (RR-00321 through RR-00326) were collected from the four spoils piles. One sample was collected from the piles at MP 1329.8 (Figure 2) and MP1331.02, while two samples were collected from each of the larger piles ranging from MP 1331.52 to MP 1331.8 and MP 1332.89 to MP 1333.02 (Figure 3).

Each sample was collected as a composite of six spoils aliquots. Each aliquot was collected from approximately 6 inches below the pile surface and added to a 1-gallon resealable plastic bag. After all aliquots were collected the composite was homogenized, labeled and double bagged. Sample information was added to a field sample data sheet (FSDS) (Attachment 4). Following collection, the spoils samples were submitted to Camp, Dresser and McKey (CDM) for preparation and analysis. In addition, CDM prepared QA/QC samples for both fine fraction (RR-00219 through RR-00221) and coarse fraction (RR-00221). The prepared samples were shipped to EMSL Laboratories, Inc. (EMSL) facility in Libby, Montana for analysis.

Results

All six soil samples contained both fine and coarse fractions that were analyzed using Polarized Light Microscopy - Visual Area Estimation (PLM-VE) and PLM-Gravimetric methods, respectively. No asbestos was detected in any of the field or QA/QC samples (Table 1). Complete laboratory reports are found in Attachment 5.

If you have any questions please me at (218) 625-2332. Thank you for the opportunity work with you on this project.

Sincerely,
EMR, Inc.,

Scott Carney, CHMM, PG
Duluth Division Manager

Att.: Figures
Tables
Photo Log
Field Sampling Data Sheets
Laboratory Reports

Attachment 1

Figures

Figure 1
Site Locations Map

EPA Operable Unit 6
BNSF Kootenai River Sub

BNSF Personnel OSHA
Exposure Sampling Report

0 10,500 21,000 42,000
Scale In Feet

0 2 4
Scale In Miles

Map Scale 1:250,000

Project Number: 5539-140
Date: December 3, 2009
Drafted By: KLA
Reviewed By: SJC
Reference: 250K Kalispelll Topo

EMR INCORPORATED
INFRASTRUCTURE AND ENVIRONMENT
11 E. Superior St. Suite #260
Duluth, MN 55802
Phone: 218.625.2332
Fax:218.625.2337

N
W E
S

Figure 2
Map Showing
Spoils Samples &
Undercutter Spoils Piles
MP 1329

EPA Operable Unit 6
BNSF Kootenai River Sub

BNSF Personnel OSHA
Exposure Sampling Report

Legend

- Spoils Sample Locations
- Undercutter Spoils Pile Locations
- BNSF Railway

0 250 500 1,000
Scale In Feet

0 0.05 0.1
Scale In Miles

Project Number: 5539-140
Date: December 3, 2009
Drafted By: KLA
Reviewed By: SJC
Reference: NAIP 2006 Lincoln Aerial

EMR INCORPORATED
INFRASTRUCTURE AND ENVIRONMENT
11 E. Superior St. Suite #260
Duluth, MN 55802
Phone: 218.625.2332
Fax:218.625.2337

N
W E
S

Figure 3
Map Showing
Spoils Samples &
Undercutter Spoils Piles
MP 1333 - 1331

EPA Operable Unit 6
BNSF Kootenai River Sub

BNSF Personnel OSHA
Exposure Sampling Report

Legend

- Spoils Sample Locations
- Undercutter Spoils Pile Locations

0 500 1,000 2,000
Scale In Feet

0 0.1 0.2
Scale In Miles

Project Number: 5539-140
Date: December 3, 2009
Drafted By: KLA
Reviewed By: SJC
Reference: NAIP 2006 Lincoln Aerial

EMR INCORPORATED
INFRASTRUCTURE AND ENVIRONMENT
11 E. Superior St. Suite #260
Duluth, MN 55802
Phone: 218.625.2332
Fax:218.625.2337

Attachment 2

Tables

Table 1. Summary of Soil Sampling Results
BNSF Undercutter Spoils Sampling
BNSF Kootenai River Subdivision
August 19, 2009
EMR Project #5539-140

Sample ID	Sample Date	Analysis Date	Laboratory	Analytical Method	Libby Amphibole Particle Mass (mg)	Other Amphibole Particle Mass (mg)	Chrysotile Particle Mass (mg)	Milepost
RR-00321	8/19/2009	9/1/2009	EMR	PLM-VE	ND	ND	ND	1329.8
RR-00322	8/19/2009	9/1/2009	EMR	PLM-VE	ND	ND	ND	1331.52
RR-00323	8/19/2009	9/1/2009	EMSL	PLM-VE	ND	ND	ND	1331.01
RR-00324	8/19/2009	9/1/2009	EMSL	PLM-VE	ND	ND	ND	1331.8
RR-00325	8/19/2009	9/1/2009	EMSL	PLM-VE	ND	ND	ND	1332.89
RR-00326	8/19/2009	9/1/2009	EMSL	PLM-VE	ND	ND	ND	1333.02
RR-00219	8/26/2009	9/1/2009	EMSL	PLM-VE	ND	ND	ND	NA
RR-00220	8/26/2009	9/1/2009	EMSL	PLM-VE	ND	ND	ND	NA
RR-00221	8/26/2009	9/1/2009	EMSL	PLM-VE	ND	ND	ND	NA
RR-00321	8/19/2009	8/31/2009	EMSL	PLM-GRAV	ND	ND	ND	1329.8
RR-00322	8/19/2009	8/31/2009	EMSL	PLM-GRAV	ND	ND	ND	1331.52
RR-00323	8/19/2009	8/31/2009	EMSL	PLM-GRAV	ND	ND	ND	1331.01
RR-00324	8/19/2009	8/31/2009	EMSL	PLM-GRAV	ND	ND	ND	1331.8
RR-00325	8/19/2009	8/31/2009	EMSL	PLM-GRAV	ND	ND	ND	1332.89
RR-00326	8/19/2009	8/31/2009	EMSL	PLM-GRAV	ND	ND	ND	1333.02
RR-00221	8/26/2009	8/31/2009	EMSL	PLM-GRAV	ND	ND	ND	NA

Preparation Notes: D = Direct Preparation, I = Indirect, IA = Indirect Ashed
ND - Not Detected
NA - Not Applicable
Note: RR-002XX samples are QA/QC samples prepared by CDM.

Attachment 3

Photo Log

Site Name: BNSF Kootenai River Subdivision	**Site Location:** Libby, Montana
Date: August 16, 2009	**Project No.:** 5539-140

Photo No.1 Overview of the spoils pile at MP 1329.8. Sample RR-00321 was collected at this location. View to the east.

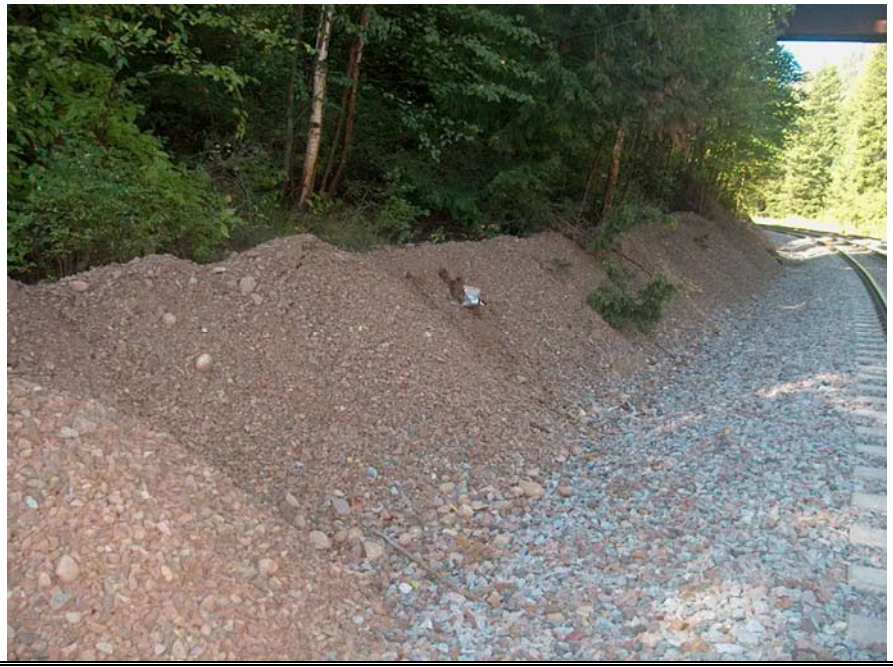

Photo No. 2 Overview of western half of the spoils pile at 1331.01. Sample RR-00323 was collected here. The Kootenai Falls pedestrian overpass is visible in the upper right corner of the photo. View to the west

Site Name: BNSF Kootenai River Subdivision | **Site Location:** Libby, Montana
Date: August 16, 2009 | **Project No.:** 5539-140

Photo No.3 Overview of the eastern end of the spoils pile at MP 1331.52. Sample RR-00322 was collected at this location. View to the west.

Photo No. 4 Overview of the spoils pile between MP 1331.52 and MP 1331.8. View to the west

Site Name: BNSF Kootenai River Subdivision | **Site Location:** Libby, Montana
Date: August 16, 2009 | **Project No.:** 5539-140

Photo No. 5 Overview of the east end of the spoils pile at MP 1332.89. Sample RR-00321 was collected at this location. View to the west.

Photo No. 6 Overview of the west end of the spoils pile at MP 1333.02. Sample RR-00326 was collected here. View to the west.

Attachment 4

Field Sampling Data Sheets

Charge No.: 2616.015.202.SA0146 8/19/09 JM
(write in or place label here)

Sheet No.: S- 007404

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Address: BNSF Row

Sampling Date: 8/19/09

Field Logbook No: _____

Page No: 1 of 2

Sampling Team: CDM (Other) EMR Names: Mike McKay

Data Item	Sample 1	Sample 2	Sample 3
Index ID	RR- 00321 MM 8/19/09	RR- 00322 MM 8/19/09	RR- 00323 MM 8/19/09
Location ID	AD-005568	→	→ 8/19/09 JM
Sample Group	PROPERTY	→	→
Location Description (circle)	Back yard Front yard Side yard Driveway (Other) MP 1329.8	Back yard Front yard Side yard Driveway (Other) MP 1331.52	Back yard Front yard Side yard Driveway (Other) MP 1331.01
Category (circle)	(FS) FD of _____ EB LB	(FS) FD of _____ EB LB	(FS) FD of _____ EB LB
Matrix Type (Surface soil unless other wise noted)	(Surface Soil) Other _____	(Surface Soil) Other _____	(Surface Soil) Other _____
Type (circle)	(Grab) # subsamples = 0 Comp. # subsamples ____	(Grab) # subsamples = 0 Comp. # subsamples ____	(Grab) # subsamples = 0 Comp. # subsamples ____
Sample Time	08:54	09:32	10:14
Top Depth (inches below ground surface)	0"	0"	0"
Bottom Depth (inches below ground surface)	3"	2"	3"
Field Comments (Note if vermiculite was not observed in sample. For 30-point composites, note total # of visual inspection points of low (L), intermediate (M), or high (H) levels of vermiculite observed)	☑ no vermiculite observed L: ____ M: ____ H: ____	☑ no vermiculite observed L: ____ M: ____ H: ____	☑ no vermiculite observed L: ____ M: ____ H: ____
GPS File (fill in or circle)	Filename: _____ NA	Filename: _____ NA	Filename: _____ NA

v 090526

For Field Team Completion (Initials)	Completed by: MM QC by: JM	For Data Entry	Entered by: ____ QC by: ____
For eFSDS validation	Validated ____	Validated ____	Validated ____

Charge No.: 2616.015.202.SA0U6 8/19/09 MM
(write in or place label here)

Sheet No.: S-007405

LIBBY FIELD SAMPLE DATA SHEET (FSDS) FOR SOIL

Address: BNSF Row

Sampling Date: 8/19/09

Field Logbook No: _____

Page No: 2 of 2

Sampling Team: CDM (Other) EMR Names: Mike McKay

Data Item	Sample 1	Sample 2	Sample 3
Index ID	RR- 00324 MM 8/19/09	RR- 00325 MM 8/19/09	RR- 00326 MM 8/19/09
Location ID	AD-005568	→	→ 8/19/09 MM
Sample Group	Property	→	→
Location Description (circle)	Back yard Front yard Side yard Driveway (Other) MP 1331.8	Back yard Front yard Side yard Driveway (Other) MP 1332.89	Back yard Front yard Side yard Driveway (Other) MP 1333.02
Category (circle)	(FS) FD of _____ EB LB	(FS) FD of _____ EB LB	(FS) FD of _____ EB LB
Matrix Type (Surface soil unless other wise noted)	(Surface Soil) Other _____	(Surface Soil) Other _____	(Surface Soil) Other _____
Type (circle)	(Grab) # subsamples = 0 Comp. # subsamples _____	(Grab) # subsamples = 0 Comp # subsamples _____	(Grab) # subsamples = 0 Comp. # subsamples _____
Sample Time	11:10	12:10	12:21
Top Depth (inches below ground surface)	0	0	0
Bottom Depth (inches below ground surface)	3"	2"	2"
Field Comments (Note if vermiculite was not observed in sample. For 30-point composites, note total # of visual inspection points of low (L), intermediate (M), or high (H) levels of vermiculite observed)	☐ no vermiculite observed L: X M: ___ H: ___	☐ no vermiculite observed L: X M: ___ H: ___	☑ no vermiculite observed L: ___ M: ___ H: ___
GPS File (fill in or circle)	Filename: _____ NA	Filename: _____ NA	Filename: _____ NA

v 090526

For Field Team Completion (Initials)	Completed by: MM QC by: [signature]	For Data Entry	Entered by: _____ QC by: _____
For eFSDS validation	Validated _____	Validated _____	Validated _____

Attachment 5

EMSL Laboratory Reports

PLM-VE Laboratory Reports

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, New Jersey 08108
Phone: (856) 858-4800
Fax: (856) 858-9551

LETTER OF TRANSMITTAL

To:	Scott Carney	Date:	September 18 ,2009
	EMR, Inc.	From:	Charles E. LaCerra
	11 East Superior Street Suite 260	Re:	Libby, MT BNSF Work Mobile Lab Analytical Reports
	Duluth, MN 55802		See Below
	Phone: 763-277-5200		

We are sending you: **× Attached** **___ Under separate cover via _____**

- ☐ Solicitation
- ☐ Copy of Letter
- ☐ Invoice #'s See Below
- ☐ Subcontract
- ☐ As noted
- ☐ Other
- ☐ Laboratory Samples
- ☒ Analytical Reports

These are transmitted as indicated below:

- ☐ Execute___Original(s)
- ☐ Review & Comment
- ☐ For Approval
- ☐ Return ____Orginal(s)
- ☐ As Requested
- ☐ Respond as instructed
- ☒ For Your Information/File
- ☐ Other

Remarks:

Enclosed please find one (1) copy of the following mobile lab analytical reports for analysis for your review and use for the above referenced project:

270900755 270900756

Please feel free to contact me with any questions or if you require additional information

Copy to: _____ Signed: Charles LaCerra

STANDARD LABORATORY DATA PACKAGE CHECKLIST

Instructions: All applicable data package deliverables are included in the following nine pages. Using the print option will print out all forms necessary and in the appropriate order. Please provide information as directed.

Analytical Test Report
Bulk Asbestos Analysis by Polarized Light Microscopy (PLM)

Prepared For:	EMR, Inc. 11 East Superior Street
City/State:	Duluth, MN 55802
Laboratory Name:	EMSL Analytical, Inc.
City/State:	Libby, Montana
Laboratory Job No.:	270900755
Method Utilized (SOP and Rev. No.):	SRC-Libby-03, Rev. 2
Circle One:	(Visual Estimation) Point Counting Approach
Report Reviewed by:	

STANDARD LABORATORY DATA PACKAGE CHECKLIST

Instructions: For PLM analytical results raw data packages, complete and sign the following checklist. Attach supporting documentation as outlined below. Organize the supporting documentation in the order listed below. Paginate the completed raw data package.

		Laboratory Verification (Initials and Date)	Validator Verification (Initials and Date)
1	**Number of samples received:** 9 *An SDG is defined as no more than 200 samples.* **Additional Supporting Documentation:** Attach COC forms having footer R (report).	KB 9/1/09	N/A
2	**Date of sample receipt and condition of samples:** 8/28/2009 OK *For Condition of samples enter "OK" or "See SDG Case Narrative".*	KB 9/1/09	N/A
3	**SDG Case Narrative:** **Additional Supporting Documentation:** Attach SDG Narrative and any modification forms.	KB 9/1/09	9/14/09
4	**Check for contamination (daily):** Wipe microscope slides with lens paper before using. *Laboratory Verification initial and date signifies that this has been performed for the samples in this SDG.*	KB 9/1/09	N/A
5	**Verification of the refractive indices of the refractive index liquids once per month:** **Additional Supporting Documentation:** Provide information indicating a monthly record of checking each of the four liquids including liquid name, lot number and analyst initials. (See table - Results of RI Liquids Calibration)	KB 9/1/09	N/A
6	**Verification of microscope adjustments prior to each SDG:** *Laboratory Verification initial and date signifies that this has been performed for the samples in this SDG.*	KB 9/1/09	N/A
7	**Reference material - Visual Estimation Approach:** *Laboratory Verification initial and date signifies that this has been performed for the samples in this SDG.*	KB 9/1/09	N/A
	Reference material - Point Counting Approach: **Additional Supporting Documentation:** Provide calibration curve documentation, printed from the EDD spreadsheet.	N/A	N/A
8	**VE and/or PC hard copy data forms (as presented in the EDD spreadsheet):** **Additional Supporting Documentation:** Copies of the Hard Copy Data Forms for all investigative samples and laboratory duplicates will be provided from systems that are entered electronically.	KB 9/1/09	9/17/09
9	**Bench sheets for data results:** **Additional Supporting Documentation:** Provide copies of the hand written or LIMS system generated raw data sheets for sample results.	KB 9/1/09	9/17/09

COCs

Chain of Custody Record

Libby Asbestos Investigation

No. D2652

From: CDM
2714 Walnut St
Denver, CO 80205

U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 300
Denver, CO 80202-2413

Send to: EMSL-Mobile Lab
107th W 4th St
Libby, MT 59923

via: ☐ hand delivery ☑ shipped

Date Shipped: 8/27/2009
Carrier Name: Fed-Ex
Airbill: N/A

2709000755

Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
☑	RR-00219	FG	1	8/25/2009	S RCM	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑
☑	RR-00220	FG	1	8/26/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑
☑	RR-00221	FG	1	8/26/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑
☑	RR-00321	FG	1	8/19/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑
☑	RR-00322	FG	1	8/19/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑
☑	RR-00323	FG	1	8/19/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑
☑	RR-00324	FG	1	8/19/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑
☑	RR-00325	FG	1	8/19/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑
☑	RR-00326	FG	1	8/19/2009	S	3 Day	PLM-VE (SRC-Libby-03 (rev 2))		☑

ICB 9/1/09

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Total Number of Samples 9

END OF SUBMITTAL

Additional Comments:

QC'd 9/9 082709

Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Carrie Madrid CDM	8/27/09 1015	Edith J. Wyatt-Pescador/EMSL	8/28/09 1408	OK & accept
Edith J. Wyatt-Pescador/EMSL	9/16/09 1023			

Apr 24, 2003 Rev 1

Analytical Report Copy

Page 1 of 1

INTERNAL CHAIN OF CUSTODY

8/31/2009 9:26:35 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix** Soils **TAT:** 72 Hour **Qty:** 9

Acct Sts: **Slsprsn:** rdemalo **Logged:** jwyattpescador **Date:** 8/28/2009

Sample Condition: ☒ Acceptable ☐ Unacceptable

Inter- Lab Sample Transfer

Samples Relinquished: _____ Date _____
Samples Received: _____ Date _____
Package Mailed to Westmont: _____ Date _____
Method of Delivery: _____

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other _____

Final Package Received: _____ Date: _____

Comments

Initial Prep (Initials/Lab): KB **Date:** 9/1/09
Filter Prep (Initials/Lab): _____ **Date:** _____
Grid Prep (Initials/Lab): _____ **Date:** _____

For Special Projects Use Only:

QC Selection: _____ **Date:** _____
Date Package Review: _____ **Date:** 9/18/09
Date Package Mailed: _____ **Date:** 9/18/09

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0001	RR-00219	FG	8/31/2009 2:08:00 PM
270900755	270900755-0002	RR-00220	FG	8/31/2009 2:08:00 PM
270900755	270900755-0003	RR-00221	FG	8/31/2009 2:08:00 PM
270900755	270900755-0004	RR-00321	FG	8/31/2009 2:08:00 PM
270900755	270900755-0005	RR-00322	FG	8/31/2009 2:08:00 PM
270900755	270900755-0006	RR-00323	FG	8/31/2009 2:08:00 PM
270900755	270900755-0007	RR-00324	FG	8/31/2009 2:08:00 PM
270900755	270900755-0008	RR-00325	FG	8/31/2009 2:08:00 PM

INTERNAL CHAIN OF CUSTODY

8/31/2009 9:26:35 AM

Order ID: 270900755

Attn:	Scott Carney EMR, Inc. 11 East Superior Street Suite 260 Duluth, MN 55802	Customer ID	EMRI78
		Customer PO:	
		Received:	08/28/09 2:08 PM
Fax:	(218) 625-2337 Phone: (218) 625-2332		
Project:	**D2652** **Samples collected 8/19, 25, and 26/2009**	EMSL Order:	270900755
		EMSL Proj ID:	BNSF 2009 OSHA
		Cust COC ID	

Test: **PLM Libby VE** **Matrix** Soils **TAT:** 72 Hour **Qty:** 9

270900755	270900755-0009	RR-00326	FG	8/31/2009 2:08:00 PM

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:17 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0001	RR-00219	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	VB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	9/2/09
Data Entry:	Dr	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Validation:	VL	**Date:**	9/4/09
Reported to Client:	VL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:17 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0002	RR-00220	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	9/2/09
Data Entry:	Qu	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:17 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0003	RR-00221	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	ICB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	9/2/09
Data Entry:		**Date:**	9/3/09
Structure Review:		**Date:**	
Data Validation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:18 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0004	RR-00321	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	9/2/09
Data Entry:	DC	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:18 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0005	RR-00322	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	ICB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RLCM	**Date:**	9/2/09
Data Entry:	CL	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:18 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0006	RR-00323	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	VB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	R/Cm	**Date:**	9/2/09
Data Entry:	DL	**Date:**	9/2/09
Structure Review:	DC	**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:18 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0007	RR-00324	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	9/2/09
Data Entry:	[illegible]	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:19 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0008	RR-00325	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	R/cm	**Date:**	9/2/09
Data Entry:	JL	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:27:19 AM

Order ID: 270900755

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2652**
Samples collected 8/19, 25, and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900755
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby VE **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900755	270900755-0009	RR-00326	FG	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	ICB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RLM	**Date:**	9/2/09
Data Entry:	[illegible]	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Validation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

SDG NARRATIVE

Instructions: The following information should be included in all narratives. Please see the attached narrative template.

1. List the method or methods used.
2. For any modifications, reference the modification number and attach a copy of the signed document to the raw data package.
3. If sample condition is not "OK", explain why and any implications to the data.

Asbestos • Microbiology • Indoor Air Quality • Industrial Hygiene • Lead • Chemistry • Materials

EMSL ANALYTICAL, INC.
http://www.emsl.com

Corporate Office & Lab
107 Haddon Avenue
Westmont, NJ 08108
1-800-220-3675
1-856-858-4800

September 18, 2009

Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802
218-625-2337

RE: SDG Narrative – PLM Analysis by SRC-Libby-03, Revision 2
EMSL Analytical, Inc. Laboratory Order ID: 270900755

Dear Scott:

Nine (9) samples were received in a sealed box on 8/28/09 and signed for by the sample-receiving clerk. These samples were assigned to an internal EMSL laboratory order ID number of 270900755, each sample was assigned a unique, sequential laboratory ID number, and the job was entered into the Laboratory Information System (LIMS). The laboratory ID numbers and the login information are summarized on the EMSL internal Chain of Custodies. Sample condition and signatures are recorded on Chain of Custody D2652 as submitted by CDM Libby, MT.

These samples were analyzed in accordance with SRC-Libby-03, Revision 2 for the Analysis of Asbestos Fibers in Soil by Polarized Light Microscopy, Visual Estimation Approach, with modifications described in Laboratory Modification document:.

Results were e-mailed to the Libby Distribution Group on 9/4/09. If you have any questions or require additional information, please do not hesitate to contact me at 856-858-4800, ext. 1253.

Sincerely,
EMSL Analytical, Inc.

Charles LaCerra
Special Projects Manager

REFRACTIVE INDEX LIQUIDS

Instructions: Please see and follow attached table from Shu-Chun Su, Technical Expert for NVLAP Asbestos Programs. (Suggested Format for Recording Results of RI Liquids Calibration using Cargille Glass Standard and Dispersion Staining Method - Version: February 1996)

The following components are included in the table:

1 Date
2 Nominal or Labeled n_D 25 degree Celsius
3 Cargille Glass
3a Nominal or Labeled R.I.
3b Lot No.
4 Central Stop DS Observation
4a Predominant DS Color
4b Corresponding $alpha_D$
5 Liquid or Room Temperature (degree Celsius)
6 Actual or Calibrated n_D 25 degree Celsius
7 Difference between Calibrated n_D 25 degree Celsius and Labeled n_D 25 degree Celsius
8 Accept or Reject
9 Analyst

Calibration Of Common RI Oils

Date: 8/24/09

RI Oil		CARGILLE GLASS		CENTRAL STOP DS						
N_D	Lot #	Labeled RI	Lot #	DS Color	λ_0	dN_D/dt	T_R	N_X	N_D-N_X	Accept or Reject
1.550	13619HI	1.550	C	Blue	620	4.91E-04	20.4	1.551	0.001	ACCEPT
1.605	0701	1.600	B	L Blue	660	4.41E-04	20.4	1.601	0.004	ACCEPT
1.625	0807	1.625	B	Blue	600	4.80E-04	20.4	1.623	0.002	ACCEPT
1.680		1.680	C	Blue	620	4.75E-04	20.4	1.679	0.001	ACCEPT
1.700		1.700				4.80E-04			1.700	REJECT

From Su (1996) RI Oil Conversion Tables (except 1.625 from Su Spreadsheet)
(Available in EMSL's RI Calibration SOP)
Temperture Corrected

N_D=The Refracted Index the Manufacturer Calibrated for the Oil At 25^0 C

λ_0 = Associated wavelength of observerd Dispersion Staining Color (from McCrone color chart)

dn_D/dt=The Change in Refractive Index per Degree Celsius from RI Oil bottle

T_R=Room Temperature at the Time of the Calibration in °C

N_X=The Refractive Index Measured During Calibration

Analyst: Kelly R Barnes 8/24/09
Signature / Date

SAMPLE RESULTS

See Attached Sample Results

Instructions: These sample result forms are from the PLM (VE & PC) Data Sheet and EDD v4.xls file. They are labeled in this file as the VE or PC hard copy data form.

Samp_No	Location	Sub_Location	Matrix	Analyte	Results_Qualifier	Result	Result_Units	Analytical_Method	Reporting_Limit
54210	54218	W1-DOZER	Air	Asbestos PCM		0.0073	fibers/cc	NIOSH 7400 PCM	0.0036
54211	54219	W2-EXCAVATOR	Air	Asbestos PCM	<	0.0030	fibers/cc	NIOSH 7400 PCM	0.0030
54212	54220	W3-DUMP TRUCK	Air	Asbestos PCM		0.0050	fibers/cc	NIOSH 7400 PCM	0.0025
54213	54221	27	Air	Asbestos PCM	<	0.0006	fibers/cc	NIOSH 7400 PCM	0.0006
54214	54222	28	Air	Asbestos PCM	<	0.0006	fibers/cc	NIOSH 7400 PCM	0.0006
54215	54223	11	Air	Asbestos PCM	<	0.0006	fibers/cc	NIOSH 7400 PCM	0.0006
54216	54224	25	Air	Asbestos PCM		0.0007	fibers/cc	NIOSH 7400 PCM	0.0006
54217	54225	FIELD BLANK	Air	Asbestos PCM	<	7.0	fibers/mm2	NIOSH 7400 PCM	7.0

Reporting_Limit_Units	WA#	QC_Type	Date_Analyzed
fibers/cc	218-09/02/09-0053	N/A	9/3/2009
fibers/cc	218-09/02/09-0053	N/A	9/3/2009
fibers/cc	218-09/02/09-0053	N/A	9/3/2009
fibers/cc	218-09/02/09-0053	N/A	9/3/2009
fibers/cc	218-09/02/09-0053	N/A	9/3/2009
fibers/cc	218-09/02/09-0053	N/A	9/3/2009
fibers/cc	218-09/02/09-0053	N/A	9/3/2009
fibers/mm2	218-09/02/09-0053	N/A	9/3/2009

FILE NAME: EMSL27_270900755_PLM_VE.xls

Version : 7c

PLM VISUAL ESTIMATION DATA RECORDING SHEET

Laboratory Name	EMSL27	Data Entry by:	L. Ramowski
Job Number	270900755	Data Entry Date:	9/2/2009
Date Received	8/28/2009		
SOP Name/Revision	SRC-LIBBY-03 (Rev 2)	QC Check by:	K. Lusher
Spreadsheet version	7c	QC Check Date:	9/4/2009

							Stereomicroscopy Examination	Libby Amphibole (LA)			Other Amphibole (OA)			Chrysotile (Ch)			
EPA Index ID	Index Suffix Char.	Index Suffix No.	QA Type (NOT QA, LDS, LDC)	Lab Sample ID	Date Analyzed	Analyst Name	Sample Appearance	Qual	LA-MF (%)	Bin	Qual	OA-AF (%)	OA Type (AMOS, ANTH, CROC, UNK)	Qual	Ch-AF (%)	Deviation?	Comments
RR-00219	FG	1	Not QA	270900755-0001	9/1/2009	K. Barnes	e,non-fibrous,homogen	ND		A	ND			ND			
RR-00220	FG	1	Not QA	270900755-0002	9/1/2009	K. Barnes	e,non-fibrous,homogen	ND		A	ND			ND			
RR-00221	FG	1	Not QA	270900755-0003	9/1/2009	K. Barnes	,non-fibrous,homogene	ND		A	ND			ND			
RR-00321	FG	1	Not QA	270900755-0004	9/1/2009	K. Barnes	,non-fibrous,homogene	ND		A	ND			ND			
RR-00322	FG	1	Not QA	270900755-0005	9/1/2009	K. Barnes	,non-fibrous,homogene	ND		A	ND			ND			<1% cellulose
RR-00323	FG	1	Not QA	270900755-0006	9/1/2009	K. Barnes	,non-fibrous,homogene	ND		A	ND			ND			
RR-00324	FG	1	Not QA	270900755-0007	9/1/2009	K. Barnes	,non-fibrous,homogene	ND		A	ND			ND			
RR-00325	FG	1	Not QA	270900755-0008	9/1/2009	K. Barnes	,non-fibrous,homogene	ND		A	ND			ND			
RR-00326	FG	1	Not QA	270900755-0009	9/1/2009	K. Barnes	,non-fibrous,homogene	ND		A	ND			ND			

BENCH SHEETS

Instructions: Please provide handwritten or LIMS system generated raw data sheets for sample results.

PLM VISUAL ESTIMATION DATA RECORDING SHEET

Laboratory Name: EMSL27 | Date Received: 8/28/2009

Job Number: 270900755 | SOP Name/Revision: SRC-Libby-03 (Rev. 2)

EPA Index ID	Index Suffix Char.	Index Suffix No.	QA Type (NOT QA, LDS, LDC)	Lab Sample ID	Date Analyzed	Analyst Name	Stereomicroscopy Examination					Libby Amphibole		Other Amphibole		
							Sample Appearance	Est. % LA		Est. % OA and C		Qual (ND, Tr, <)	Mass Fract (%)	Qual (ND, <)	Area Fract (%)	OA Type (AMOS, ANTH, CROC, UNK)
								Qual (ND, Tr, <)	Mass Fract (%)	Qual (ND, <)	Area Fract (%)					
RR-00219	FG	1	Not QA	270900755-0001	9/1/09	K. Barnes	White, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
RR-00220	FG	1	Not QA	270900755-0002	9/1/09	K. Barnes	White, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
RR-00221	FG	1	Not QA	270900755-0003	9/1/09	K. Barnes	Tan, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
RR-00321	FG	1	Not QA	270900755-0004	9/1/09	K. Barnes	Tan, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
RR-00322	FG	1	Not QA	270900755-0005	9/1/09	K. Barnes	Tan, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
RR-00323	FG	1	Not QA	270900755-0006	9/1/09	K. Barnes	Tan, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
RR-00324	FG	1	Not QA	270900755-0007	9/1/09	K. Barnes	Tan, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
RR-00325	FG	1	Not QA	270900755-0008	9/1/09	K. Barnes	Tan, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
RR-00326	FG	1	Not QA	270900755-0009	9/1/09	K. Barnes	Tan, non-fibrous homogeneous	ND	0	ND	0	ND		ND		
					K. Barnes 9/1/09											

Note: Data Recording Sheet is formatted to print on 11x17 paper.

	Chrysotile		Deviation?	Comments (list below)	OPTICAL PROPERTIES FOR LA (see key for appropriate data inputs)							
	Qual (ND, <)	Area Fract (%)			Morph.	Fiber Color	Sign Elong. (+/-)	Pleoch. (Y/N)	Angle Extinct.	Ref. Index α	Ref. Index γ	Biref.
RR-00219	ND											
RR-00220	ND											
RR-00221	ND											
RR-00321	ND											
RR-00322	ND											
RR-00323	ND											
RR-00324	ND											
RR-00325	ND											
RR-00326	ND											

Warner 9/1/09

Polarized Light Microscopy (PLM) Performed on Soil Samples by NIOSH Method 9002, Issue 2

Client: [redacted] Corp.
Address: [redacted] KB 9/1/09
Fax: [redacted]
Project: [redacted]

Logged: [redacted] **TAT:** [redacted]
Date/Time Due: [redacted]

Special Instructions

Order Number
[redacted]
270900755

Macroscopic	Treatment	Asbestos	Fibrous	Non-Fibrous
COLOR (C): 1 Brown, 2 Gray, 3 Tan, 4 White, 5 Red, 6 Various, 7 Black, 8 Silver, 9 Blue, 10 Yellow	1 Teased, 2 Crushed, 3 Dissolve, 4 Ashed, 5 Heated, 6 Melted	1 Chrysotile, 2 Amosite, 3 Anthophyllite, 4 Tremolite, 5 Actinolite, 6 Crocidolite	7 Cellulose, 8 Glass, 9 Min. Wool, 10 Synthetic, 11 Other, 12 Wollastonite, 13 Hair	14 Quartz, 15 Mica, 16 Gypsum, 17 Cal. Carbonate, 18 Matrix, 19 Perlite, 20 Other
TEXTURE (T): 1 Fibrous, 2 Non-Fibrous, 3 Other				
HOMOGENEITY (H): 1 Homogeneous, 2 Heterogeneous, 3 OTHER, 4 Layers (#)				

COMPONENT TYPES — MICROSCOPIC — Optical Properties

Morphology (M): 1. Wavy, 2. Straight, 3. Uniform Diameter, 4. Ribbon-Like, 5. Tapered Ends, 6. Scaled, 7. Pitted, 8. Medulla, 9. Exotic Shapes, 10. Other
Sign of Elongation (S): 1. +, 2. -, 3. Variable
Pleochroism (P): 1. Yes, 2. No
Birefringence (B): 1. Low: 0.010, 2 Med 0.010-0.050, 3 High >0.050, 4 None 0.00 or Isotropic
Fiber Color (FC): 1 White, 2 Brown, 3 Beige, 4 Blue, 5 Green, 6 Colorless
Extinction (E): 1. Parallel, 2. Symmetrical, 3. Oblique, 4. Undulose

Sample	Macrosc.	Treat	Stereo Asbestos Est. %	Asbestos Type	% of Asbestos	Other Fibrous Type	Other Fibrous %	Non-Fibrous Type	Non-Fibrous %	Non-Asb Char. Ex. E4	Optical Properties
RR-00219	(C) 4, (T) 2, (H) 1	1	0	ND	0	—		20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
RR-00220	(C) 4, (T) 2, (H) 1	1	0	ND	0	—		20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
RR-00221	(C) 3, (T) 2, (H) 1	1	0	ND	0	—		20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
RR-00321	(C) 3, (T) 2, (H) 1	1	0	ND	0	—		20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
RR-00322	(C) 3, (T) 2, (H) 1	1	0	ND	0	7	<1	20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
RR-00323	(C) 3, (T) 2, (H) 1	1	0	ND	0	—		20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
RR-00324	(C) 3, (T) 2, (H) 1	1	0	ND	0	—		20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
RR-00325	(C) 3, (T) 2, (H) 1	1	0	ND	0	—		20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
RR-00326	(C) 3, (T) 2, (H) 1	1	0	ND	0	—		20	100		⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E
	(C), (T) KBarnes 9/1/09, (H)							20			⊥ R.I. / ∥ R.I. / M / S / P / B / (FC) / E

Analyst: KBarnes Date: 9/1/09 Computer: _____ Date: _____
Room Temp (C): 21.9

PLM-Gravimetric Laboratory Reports

STANDARD LABORATORY DATA PACKAGE CHECKLIST

Instructions: **All applicable data package deliverables are included in the following nine pages. Using the print option will print out all forms necessary and in the appropriate order. Please provide information as directed.**

Laboratory Name: EMSL27
City/State: Libby, MT
Laboratory Job No.: 270900756
Method Utilized (SOP and Rev. No.): SRC-LIBBY-01 Revision 2 PLM-Gravimetric

Instructions: For Gravimetric analytical results raw data packages, complete and sign the following checklist. Attach supporting documentation as outlined below. Organize the supporting documentation in the order listed below. Paginate the completed raw data package.

		Laboratory Verification (Initials and Date)	Validator Verification (Initials and Date)
1	**Number of samples received:** 7 *An SDG is defined as no more than 100 samples.* **Additional Supporting Documentation:** Attach COC forms having footer R (report).	KB 8/31/09	N/A
2	**Date of sample receipt and condition of samples:** 8/28/2009 *For Condition of samples enter "OK" or "See SDG Case Narrative".*	KB 8/31/09	N/A
3	**SDG Case Narrative:** **Additional Supporting Documentation:** Attach SDG Narrative and any modification forms.	KB 8/31/09	9/17/09
4	**Check for contamination (daily):** Wipe microscope slides with lens paper before using. *Laboratory Verification initial and date signifies that this has been performed for the samples in this SDG.*	KB 8/31/09	N/A
5	**Verification of the refractive indices of the refractive index liquids once per month:** **Additional Supporting Documentation:** Provide information indicating a monthly record of checking each of the four liquids including liquid name, lot number and analyst initials. (See table - Results of RI Liquids Calibration)	KB 8/31/09	N/A
6	**Verification of microscope adjustments prior to each SDG:** *Laboratory Verification initial and date signifies that this has been performed for the samples in this SDG.*	KB 8/31/09	N/A
7	**Gravimetric hard copy data forms (as presented in the EDD spreadsheet):** **Additional Supporting Documentation:** Copies of the Hard Copy Data Forms for all investigative samples and laboratory duplicates will be provided from systems that are entered electronically.	KB 8/31/09	9/17/09
8	**Bench sheets for data results:** **Additional Supporting Documentation:** Provide copies of the hand written or LIMS system generated raw data sheets for sample results.	KB 8/31/09	9/17/09

COCs

Chain of Custody Record

From: CDM
2714 Walnut St
Denver, CO 80205

Libby Asbestos Investigation

U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 300
Denver, CO 80202-2413

No. D2653

Send to: EMSL-Mobile Lab
107th W 4th St
Libby, MT 59923

via: ☐ hand delivery ☑ shipped

Date Shipped: 8/27/2009
Carrier Name: Fed-Ex
Airbill: N/A

270900756

Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
☐	RR-00221	C		8/26/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 2))		☐
☐	RR-00321	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 2))		☐
☐	RR-00322	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 2))		☐
☐	RR-00323	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 2))		☐
☐	RR-00324	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 2))		☐
☐	RR-00325	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 2))		☐
☐	RR-00326	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 2))		☐

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Total Number of Samples 7

END OF SUBMITTAL

Additional Comments: COC Revised to change Revisim from 1 to 2.

Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Carrie Madrid CDM	9/2/09 1125	Elizabeth J. Wyatt-Pescador/EMSL	8/28/09 1408	OK + accept
Elizabeth J. Wyatt-Pescador/EMSL	9/16/09 1025	L. Ranowski	9/17/09 9:00 AM	

Apr 24, 2003 Rev 1

Chain of Custody Record

Libby Asbestos Investigation

No. D2653

From: CDM
2714 Walnut St
Denver, CO 80205

U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 300
Denver, CO 80202-2413

Send to: EMSL-Mobile Lab
107th W 4th St
Libby, MT 59923

via: ☐ hand delivery ☑ shipped

Date Shipped: 8/27/2009
Carrier Name: Fed-Ex
Airbill: N/A

270900756

Sample Placed in Cooler/Bag	Index ID	Suffix ID*	Suffix #	Sample Date	Sample Matrix (S=Soil; W=Water; D=Dust; A=Air;B=Bulk Insulation)	Turn Around Time	Analysis Request	Comments	Sample Received by Lab
☑	RR-00221	C		8/26/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		☑
☑	RR-00321	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		☑
☑	RR-00322	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		☑
☑	RR-00323	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		☑
☑	RR-00324	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		☑
☑	RR-00325	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		☑
☑	RR-00326	C		8/19/2009	S	3 Day	PLM-GRAV (SRC-Libby-01 (rev 1))		☑

KB
8/31/09

*Suffix IDs: C= Coarse; B= Bulk; F= Fine; FG= Fine Ground; CA= Archive Coarse; BA= Archive Bulk; FA= Archive Fine; FGA=Archive Fine Ground

Total Number of Samples 7

END OF SUBMITTAL

Additional Comments:

QC'd 9/9/08/09

Relinquished by (Signature and Company)	Date/Time	Received by (Signature and Company)	Date/Time	Sample Condition upon Receipt
Carrie Madrid CDM	8/27/09 8/30mm 1030	Edith J. Wyatt-Pescador / EMSL	9/28/09/1400	OK + accept
Edith J. Wyatt-Pescador/EMSL	9/16/09/1025	L. Barnowski EMSL	9/16/09 9:00	

Apr 24, 2003 Rev 1

Analytical Report Copy

INTERNAL CHAIN OF CUSTODY

8/31/2009 9:29:25 AM

Order ID: 270900756

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2653**
Samples collected 8/19 and 26/2009

Customer ID EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900756
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby Gravimetric **Matrix** Soils **TAT:** 72 Hour **Qty:** 7

Acct Sts: **SIsprsn:** rdemalo **Logged:** jwyattpescador **Date:** 8/28/2009

Sample Condition: ☑ Acceptable ☐ Unacceptable

Inter-Lab Sample Transfer

Samples Relinquished: _____ Date _____
Samples Received: _____ Date _____
Package Mailed to Westmont: _____ Date _____
Method of Delivery: _____

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other _____

Final Package Received: _____ Date: _____

Comments

Initial Prep (Initials/Lab): VB **Date:** 8/31/9/6/09
Filter Prep (Initials/Lab): _____ **Date:** _____
Grid Prep (Initials/Lab): _____ **Date:** _____

For Special Projects Use Only:

QC Selection: _____ **Date:** _____
Date Package Review: Qa **Date:** 9/12/09
Date Package Mailed: Qa **Date:** 9/[illegible]09

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900756	270900756-0001	RR-00221	C	8/31/2009 2:08:00 PM
270900756	270900756-0002	RR-00321	C	8/31/2009 2:08:00 PM
270900756	270900756-0003	RR-00322	C	8/31/2009 2:08:00 PM
270900756	270900756-0004	RR-00323	C	8/31/2009 2:08:00 PM
270900756	270900756-0005	RR-00324	C	8/31/2009 2:08:00 PM
270900756	270900756-0006	RR-00325	C	8/31/2009 2:08:00 PM
270900756	270900756-0007	RR-00326	C	8/31/2009 2:08:00 PM

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:29:40 AM

Order ID: 270900756

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2653**
Samples collected 8/19 and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900756
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby Gravimetric **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900756	270900756-0001	RR-00221	C	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	8/31/09
Preliminary Data Sent to Special Projects:	R/cm	**Date:**	9/1/09
Data Entry:	JL	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:29:40 AM

Order ID: 270900756

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2653**
Samples collected 8/19 and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900756
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby Gravimetric **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900756	270900756-0002	RR-00321	C	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	8/31/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	9/1/09
Data Entry:	[illegible]	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:29:41 AM

Order ID: 270900756

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2653**
Samples collected 8/19 and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900756
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby Gravimetric **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900756	270900756-0003	RR-00322	C	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	8/31/09
Preliminary Data Sent to Special Projects:	R/cm	**Date:**	9/1/09
Data Entry:	JL	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:29:41 AM

Order ID: 270900756

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2653**
Samples collected 8/19 and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900756
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby Gravimetric **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900756	270900756-0004	RR-00323	C	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	8/31/09
Preliminary Data Sent to Special Projects:	R/cm	**Date:**	9/1/09
Data Entry:	QL	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:29:41 AM

Order ID: 270900756

Attn:	Scott Carney EMR, Inc. 11 East Superior Street Suite 260 Duluth, MN 55802	Customer ID:	EMRI78
		Customer PO:	
		Received:	08/28/09 2:08 PM
Fax:	(218) 625-2337 Phone: (218) 625-2332	EMSL Order:	270900756
Project:	**D2653** **Samples collected 8/19 and 26/2009**	EMSL Proj ID:	BNSF 2009 OSHA
		Cust COC ID	

Test: PLM Libby Gravimetric **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900756	270900756-0005	RR-00324	C	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	R/Cmm	**Date:**	9/1/09
Data Entry:	SL	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Validation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:29:42 AM

Order ID: 270900756

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2653**
Samples collected 8/19 and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900756
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby Gravimetric **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900756	270900756-0006	RR-00325	C	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KD	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	9/1/09
Data Entry:	On	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Validation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

8/31/2009 9:29:42 AM

Order ID: 270900756

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802
Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **D2653**
Samples collected 8/19 and 26/2009

Customer ID: EMRI78
Customer PO:
Received: 08/28/09 2:08 PM

EMSL Order: 270900756
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: PLM Libby Gravimetric **Matrix:** Soils **TAT:** 72 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900756	270900756-0007	RR-00326	C	8/31/2009 2:08:00 PM

Comments:

ANALYZED:	KB	**Date:**	9/1/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	9/1/09
Data Entry:	Qu	**Date:**	9/2/09
Structure Review:		**Date:**	
Data Valildation:	KL	**Date:**	9/4/09
Reported to Client:	KL	**Date:**	9/4/09

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

SDG NARRATIVE

Instructions: The following information should be included in all narratives. Please see the attached narrative template.

1. List the method or methods used.
2. For any modifications, reference the modification number and attach a copy of the signed document to the raw data package.
3. If sample condition is not "OK", explain why and any implications to the data.

Asbestos • Microbiology • Indoor Air Quality • Industrial Hygiene • Lead • Chemistry • Materials

EMSL ANALYTICAL, INC.
http://www.emsl.com

Corporate Office & Lab
107 Haddon Avenue
Westmont, NJ 08108
1-800-220-3675
1-856-858-4800

September 18, 2009

Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802
(218) 625-2337

RE: SDG Narrative – PLM Analysis by SRC-Libby-01, Revision 2
EMSL Analytical, Inc. Laboratory Order ID: 270900756

Dear Scott:

Seven (7) samples were received in a sealed cooler via FedEx on 8/28/09 and signed for by the sample receiving clerk. The samples were assigned an internal EMSL laboratory order ID number of 270900756. Samples were assigned a unique, sequential laboratory ID number, and the job was entered into the Laboratory Information System (LIMS). The laboratory ID numbers and the login information are summarized on the EMSL internal Chain of Custody. Sample condition and signatures are recorded on the USEPA Chain of Custody D2653 as submitted by the CDM Soil Laboratory, Denver, CO.

The samples were analyzed in accordance with SRC-Libby-01 Revision 2, Version 8 for the Qualitative Estimation of Asbestos in Coarse Soil by Visual Examination using Stereomicroscopy and Polarized Light Microscopy, with no modifications.

Results were e-mailed to the Libby distribution group on 9/4/09. If you have any questions or require additional information, please do not hesitate to contact me at 856-858-4800, ext. 1253.

Sincerely,
EMSL Analytical, Inc

Charles LaCerra

Charles E. LaCerra
Special Projects Manager

REFRACTIVE INDEX LIQUIDS

Instructions: Please see and follow attached table from Shu-Chun Su, Technical Expert for NVLAP Asbestos Programs. (Suggested Format for Recording Results of RI Liquids Calibration using Cargille Glass Standard and Dispersion Staining Method - Version: February 1998)

The following components are included in the table:

1 Date
2 Nominal or Labeled n_D 25 degree Celsius
3 Cargille Glass
3a Nominal or Labeled R.I.
3b Lot No.
4 Central Stop DS Observation
4a Predominant DS Color
4b Corresponding $alpha_o$
5 Liquid or Room Temperature (degree Celsius)
6 Actual or Calibrated n_D 25 degree Celsius
7 Difference between Calibrated n_D 25 degree Celsius and Labeled n_D 25 degree Celsius
8 Accept or Reject
9 Analyst

Calibration Of Common RI Oils

Date: 8/24/09

RI Oil		CARGILLE GLASS		CENTRAL STOP DS						
N_D	Lot #	Labeled RI	Lot #	DS Color	λ_0	dN_D/dt	T_R	N_X	N_D-N_X	Accept or Reject
1.550	13619HI	1.550	C	Blue	620	4.91E-04	20.4	1.551	0.001	ACCEPT
1.605	0701	1.600	B	LT Blue	660	4.41E-04	20.4	1.601	0.004	ACCEPT
1.625	0807	1.625	B	Blue	600	4.80E-04	20.4	1.623	0.002	ACCEPT
1.680		1.680	C	Blue	620	4.75E-04	20.4	1.679	0.001	ACCEPT
1.700		1.700				4.80E-04			1.700	REJECT

From Su (1996) RI Oil Conversion Tables (except 1.625 from Su Spreadsheet)
(Available in EMSL's RI Calibration SOP)
Temperture Corrected

N_D=The Refracted Index the Manufacturer Calibrated for the Oil At 25^0 C

λ_0 = Associated wavelength of observerd Dispersion Staining Color (from McCrone color chart)

dn_D/dt=The Change in Refractive Index per Degree Celsius from RI Oil bottle

T_R=Room Temperature at the Time of the Calibration in °C

N_X=The Refractive Index Measured During Calibration

Analyst: Kelly E Barnes 8/24/09
Signature / Date

SAMPLE RESULTS

See Attached Sample Results

Instructions: These sample result forms are from the PLM (VE & PC) Data Sheet and EDD v4.xls file. They are labeled in this file as the VE or PC hard copy data form.

Electronic Data Log Sheet v8 for SOP SRC-LIBBY-01 (Stereomicroscopic and Gravimetric Analysis of Coarse Soil)

File Name: GRAV_EMSL27_270900756_08-31-09.xls
Spreadsheet: Version 8

Lab Name: EMSL27
SOP Version: SRC-LIBBY-01 (Revision 2)
Lab Job No: 270900756

Electronic Data Entry by: L. Ramowski
Electronic Data Entry date: 09/02/2009

QA by: K. Lusher
QA date: 09/04/2009

Click Here to Save File

Key:
- Data entry fields
- Missing required data entry or invalid entry
- Possible data entry omission or error
- Calculated cells--Do not enter data here
- Data entry not required

EPA Index ID	Index Suffix	Lab Job-Sample No.	Status (1 = Analyzed, 2 = Missing, 3 = Contam, 4 = Cancelled)	QA Type (Not QA)	Total Sample Weight (g)			Analysis Details		Mass of Asbestos Particles (mg)													Asbestos Fractions (Values are displayed to two decimal places. Full values are uploaded into database.)			Comments (enter full text, not codes)
										Libby Amphibole (LA)				Other Amphibole (OA)					Chrysotile (C)							
					Tare Weight (g) Empty Container	Mass of Sample + Container (g)	Mass of Sample (g)	Analyst Initials	Analysis Date	LA Qual (ND, Tr)	Tare Weight - Container (mg)	Mass of LA + Container (mg)	Mass (mg) LA	OA Qual (ND, Tr)	OA Type (AMOS, ANTH, CROC, UNK)	Tare Weight - Container (mg)	Mass of OA + Container (mg)	Mass (mg) OA	C Qual (ND, Tr)	Tare Weight - Container (mg)	Mass of C + Container (mg)	Mass (mg) C	% LA	% OA	% C	
RR-00321	C	270900756-0001	1	Not QA	2.3041	149.1758	146.87	KB	8/31/2009	ND				ND					ND						<1% cellulose
RR-00322	C	270900756-0002	1	Not QA	2.2889	131.4647	129.18	KB	8/31/2009	ND				ND					ND						
RR-00323	C	270900756-0003	1	Not QA	2.2610	156.1138	153.85	KB	8/31/2009	ND				ND					ND						<1% cellulose
RR-00324	C	270900756-0004	1	Not QA	2.2883	22.4988	20.21	KB	9/1/2009	ND				ND					ND						<1% cellulose
RR-00325	C	270900756-0005	1	Not QA	2.2782	48.4902	46.21	KB	9/1/2009	ND				ND					ND						<1% cellulose
RR-00326	C	270900756-0006	1	Not QA	2.2786	116.9751	114.70	KB	9/1/2009	ND				ND					ND						<1% cellulose
RR-00221	C	270900756-0007	1	Not QA	2.2730	81.8287	79.56	KB	8/31/2009	ND				ND					ND						<1% cellulose

BENCH SHEETS

Instructions: Please provide handwritten or LIMS system generated raw data sheets for sample results.

Data Log Sheet v8 for SOP SRC-LIBBY-01

Stereomicroscopic and Gravimetric Analysis of Coarse Soil

Lab Name:	EMSL27
SOP Version:	SRC-Libby-01 (Rev2)
Lab Job No.	270900756

Calculated automatically in the "Electronic Data Entry" form. Do not

EPA Index ID	Index Suffix	Lab Job-Sample No.	Status (1 = Analyzed, 2 = Missing, 3 = Contam, 4 = Cancelled)	QA Type (Not QA)	Total Sample Weight (g): Tare Weight (g) Empty Container	Total Sample Weight (g): Mass of Sample + Container (g)	Total Sample Weight (g): Mass of Sample (g)	Analysis Details: Analyst Initials	Analysis Details: Analysis Date	Mass of Asbestos Particles (mg): Libby Amphibole (LA) Asbestos: LA Qual* (ND, Tr)	LA: Tare Weight - Container (mg)	LA: Mass of LA + Container (mg)	LA: Mass (mg) LA	Other Amphibole (OA) Asbestos: OA Qual* (ND, Tr)	OA: OA Type** (AMOS, ANTH, CROC, UNK)	OA: Tare Weight - Container (mg)	OA: Mass of OA + Container (mg)	OA: Mass (mg) OA	Chrysotile (C) Asbestos: C Qual* (ND, Tr)	C: Tare Weight - Container (mg)	C: Mass of C + Container (mg)	C: Mass (mg) C	% LA	% OA	% C	Comments (see Notes below)
RR-00221	C	270900756-0001	1	Not QA	2.2730	81.8287		KB	8/31/09	ND				ND					ND							
RR-00321	C	-0002	1	Not QA	2.3041	149.1768		KB	8/31/09	ND				ND					ND							
RR-00322	C	-0003	1	Not QA	2.2889	131.4647		KB	8/31/09	ND				ND					ND							
RR-00323	C	-0004	1	Not QA	2.2610	156.1138		KB	8/31/09	ND				ND					ND							
RR-00324	C	-0005	1	Not QA	2.2883	226.4988		KB	9/1/09	ND				ND					ND							
RR-00325	C	-0006	1	Not QA	2.2782	48.4902		KB	9/1/09	ND				ND					ND							
RR-00326	C	-0007	1	Not QA	2.2786	116.9751		KB	9/1/09	ND				ND					ND							
			KB 9/1/09																							

Notes:

*Qualifier codes: ND = No asbestos observed.
Tr = Trace levels observed but not quantified.

**OA Type codes: AMOS = Amosite
ANTH = Anthophyllite
CROC = Crocidolite
UNK = Unknown

Comment Codes (user-defined):

PLM Bulk (SRC-Libby-01 (Rev 1))

Polarized Light Microscopy (PLM) Performed on Soil Samples by NIOSH Method 9002, Issue 2

Client: [redacted] Corp.
Address: [redacted] St. [redacted]
Fax: [redacted]
Project: [redacted]

KB 9/1/09

Logged: [redacted]
TAT: [redacted]
Date/Time Due: [redacted]

Special Instructions

Order Number
[redacted]
270900756

Macroscopic	Treatment	COMPONENT TYPES: Asbestos	Fibrous	Non-Fibrous	MICROSCOPIC: Optical Properties
COLOR (C) 1 Brown 4 White 7 Black 2 Gray 5 Red 8 Silver 3 Tan 6 Various 9 Blue 10 Yellow TEXTURE (T) 1 Fibrous 2 Non-Fibrous 3 Other HOMOGENEITY (H) 1 Homogeneous 3 OTHER 2 Heterogeneous 4 Layers (#)	1 Teased 2 Crushed 3 Dissolve 4 Ashed 5 Heated 6 Melted	1 Chrysotile 2 Amosite 3 Anthophyllite 4 Tremolite 5 Actinolite 6 Crocidolite	7 Cellulose 8 Glass 9 Min. Wool 10 Synthetic 11 Other 12 Wollastonite 13 Hair	14 Quartz 15 Mica 16 Gypsum 17 Cal. Carbonate 18 Matrix 19 Perlite 20 Other	Morphology (M): 1. Wavy, 2. Straight, 3. Uniform Diameter, 4. Ribbon-Like, 5. Tapered Ends, 6. Scaled, 7. Fitted, 8. Medulla, 9. Exotic Shapes, 10. Other Sign of Elongation (S): 1. +, 2. -, 3. Variable Pleochroism (P): 1. Yes, 2. No Birefringence (B): 1 Low 0.010, 2 Med 0.010-0.050, 3 High >0.050, 4 None 0.00 or Isotropic Fiber Color (FC): 1 White, 2 Brown, 3 Beige, 4 Blue, 5 Green, 6 Colorless Extinction (E): 1. Parallel, 2. Symmetrical, 3. Oblique, 4. Undulose

Sample	Macrosc.	Treat	Stereo Asbestos Est. %	Asbestos Type	% of Asbestos	Other Fibrous Type	Other Fibrous %	Non-Fibrous Type	Non-Fibrous %	Non-Asb Char. Ex. E4	Optical Properties: ⊥ R.I.	∥ R.I.	M	S	P	B	(FC)	E
RR-00221	(C) 3	1	0	ND	0	7	<1	20	100	E4								
	(T) 2																	
	(H) 2																	
RR-00321	(C) 3	1	0	ND	0	7	<1	20	100	E4								
	(T) 2																	
	(H) 2																	
RR-00322	(C) 3	1	0	ND	0	—		20	100	E4								
	(T) 2																	
	(H) 2																	
RR-00323	(C) 3	1	0	ND	0	7	<1	20	100	E4								
	(T) 2																	
	(H) 2																	
RR-00324	(C) 3	1	0	ND	0	7	<1	20	100	E4								
	(T) 2																	
	(H) 2																	
RR-00325	(C) 3	1	0	ND	0	7	<1	20	100	E4								
	(T) 2																	
	(H) 2																	
RR-00326	(C) 3	1	0	ND	0	7	<1	20	100	E4								
	(T) 2																	
	(H) 2																	
	(C)							20										
	(T)																	
	(H)																	
	(C)							20										
	(T)																	
	(H)																	
	(C)							20										
	(T)																	
	(H)																	

KB 9/1/09

Analyst: KBarnes Date: 8/31/9/1/09 Computer: _____ Date: _____

Room Temp (C): 19.6